

Undergraduate Level

Intern: Kirsch Davis, Derek Bankieris (NASA JSC Mentor)

Presentation Title: ROS Hexapod

Research focus: ROS software/coding implementation

School: Navajo Technical University (NTU)

Student level: Junior

Abstract:

ROS Hexapod

As an intern project for NASA Johnson Space Center (JSC), my job was to familiarize myself and operate a Robotics Operating System (ROS). The project outcome will convert existing software assets into ROS using nodes, enabling a robotic Hexapod to communicate to be functional and controlled by an existing PlayStation 3 (PS3) controller. Existing control algorithms and current libraries have no ROS capabilities within the Hexapod C++ source code. Conversion of C++ codes to ROS will enable existing code to be compatible with ROS, and will be controlled using existing PS3 controller. Furthermore, my job description is to design ROS messages and script programs which will enable assets to participate in the ROS ecosystem. In addition, an open source software (IDE) Arduino board will be integrated in the ecosystem with designing circuitry on a breadboard to add additional behavior with push buttons, potentiometers and other simple elements in the electrical circuitry. Other projects with the Arduino will be a GPS module digital clock that will run off 22 satellites to show accurate real time using a GPS signal and internal patch antenna to communicate with satellites.